

The Effect of Total Quality Management on Service Quality Mediated by Digitalization Across Work Units at Regional Representative Office of a Central Bank

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ABSTRACT

This study aims to examine the influence of Total Quality Management (TQM) on service quality at regional representative office of a central bank, with digitalization as a mediating factor. The study applied a quantitative explanatory design with a total sampling technique involving all 45 employees across different units at regional representative office of a central bank. Data were collected through structured questionnaires using a likert scale. The data were analyzed using Partial Least Squares–Structural Equation Modeling (PLS-SEM) with SmartPLS software. Results show that TQM, digitalization, and service quality are perceived at very high levels. TQM significantly improves service quality both directly and indirectly through digitalization, which functions as a partial mediator. These findings highlight the importance of digital integration in reinforcing management processes and enhancing service performance. This research highlights digitalization as a mediating mechanism that strengthens cross-unit coordination and translates TQM practices into improved service performance in a public financial institution.

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1. INTRODUCTION

The Fourth Industrial Revolution integrates digital technologies, artificial intelligence (AI), the Internet of Things (IoT), big data, and automation into various sectors, including public services [1]. Within quality management, these technologies reinforce frameworks such as Total Quality Management (TQM), ISO 9001, and Six Sigma, which emphasize continuous improvement and customer satisfaction [2], [3]. Tools like

big data and AI improve monitoring by predicting errors, optimizing decision-making, and strengthening service reliability [4]–[6]. In the public sector, these advancements enable responsive, efficient, and secure services, supported by digital self-service systems and blockchain-based protection [7], [8].

Service quality, defined as the degree to which services meet stakeholder expectations, is central to organizational sustainability [9]. According to the

SERVQUAL model, it can be measured across five dimensions: tangibles, reliability, responsiveness, assurance, and empathy (Kotler & Keller, 2021). In practice, effective service delivery requires not only competent human resources but also seamless communication and coordination across work units [10].

As a local representative office of Bank Indonesia, the Kantor Perwakilan Bank Indonesia (KPwBI) Purwokerto functions as an extension of the central bank in carrying

out its mandate at the regional level, particularly in maintaining monetary stability, overseeing payment systems, and supporting local economic development. Nevertheless, service quality assessments indicate persistent challenges. According to the 2024 Change Program Report, as shown in Figure 1. KPwBI Purwokerto received the lowest score in management process, which was 68, compared to other representative offices in the province, reflecting weaknesses in coordination and monitoring mechanisms.

Table 1. Service Quality Assessment of Bank Indonesia Representative Offices in Central Java (2024)

KPwBI Central Java			
Supporting Factors	Value	Inhibiting Factors	Value
Team synergy	98	Manager's feedback	73
Sense of purpose	96		
Learning curve	96		
KPwBI Tegal			
Supporting Factors	Value	Inhibiting Factors	Value
Commitment to learning	97	Recognition	73
Learning curve	93		
Culture of innovation	93		
KPwBI Solo			
Supporting Factors	Value	Inhibiting Factors	Value
Meaningful of work	96	Work life balance	76
Learning curve	96		
Sense of urpose	94		
KPwBI Purwokerto			
Supporting Factors	Value	Inhibiting Factors	Value
Policies	96	Management process	68
Happiness with team	95		
Quality of work	95		

Source: Bank Indonesia Change Program Report (2024)

Ineffective management processes have led to administrative errors, delays in scholarship distribution, and inaccurate financial reporting, undermining reliability and responsiveness. Poor communication further aggravates these issues, reducing efficiency and stakeholder trust (Iskandar 2020; Najati and Susanto 2022; Nurhikmah and Masyi'ah 2023). To saddress this, TQM provides a structured approach emphasizing continuous service improvement, process monitoring, and employee involvement (Alzoubi, 2022; Mizuno, 2020; Hassan and Jaaron 2021). Yet, audit findings indicate gaps

in cluster evaluation, ERP monitoring, and procurement standardization, suggesting that TQM practices are not fully embedded.

Digitalization thus emerges as a critical enabler. Through real-time monitoring, integrated information systems, and transparent communication platforms, digitalization strengthens coordination and service delivery [15], [16]. However, adoption within KPwBI Purwokerto is uneven: senior managers show higher digital competence, while operational staff lag behind, limiting organizational efficiency.



Figure 1. Distribution of Digital Index by Position at KPwBI Purwokerto in 2024

Source: Bank Indonesia Change Program Report (2024)

Based on the organizational issues identified above, this study translates the practical problems into measurable research constructs. Weaknesses in management process are represented by the TQM variable, because they relate to process standardization, monitoring, and employee participation. Uneven use of digital tools across positions is represented by the digitalization variable, as it reflects the extent of digital support in cross-unit communication and work coordination. Delays and inaccuracies in service execution are represented by the service quality variable, particularly in terms of reliability, responsiveness, and assurance. Accordingly, the empirical model is designed to test whether TQM improves service quality directly and whether this relationship becomes stronger through digitalization.

Previous studies highlight that both TQM and digitalization positively influence service quality [17]–[20]. Yet findings are not always consistent, as some report limited or insignificant effects [21], [22]. Research on financial public institutions, particularly central bank representative offices, remains scarce. Therefore, this study aims to analyze the effect of TQM on service quality at KPwBI Purwokerto, with digitalization as a mediating variable.

The novelty of this study lies in its effort to explain service quality improvement from an internal organizational process perspective rather than solely from an external service delivery perspective. While previous studies have commonly linked TQM and digitalization to service quality in private firms, hospitals, or general public services, this research examines these relationships in the context of a regional representative office of a central bank, which has distinct characteristics as financial institution. In addition, this study positions digitalization not simply as a technological tool, but as a mediating mechanism that strengthens cross-unit coordination, communication, and process monitoring in the implementation of TQM. Thus, the study contributes a more specific understanding that, in public financial organizations, service quality is shaped not only by compliance with procedures and employee competence, but also by the extent to which digitalized internal processes enable quality management to function effectively across work units.

The theoretical positioning of this study is built hierarchically. At the broadest level, the study is grounded in operations management, since the main issue concerns how organizational processes and resources are managed to produce effective service

outcomes. Within this perspective, Business Process Management provides a process-oriented lens for understanding cross-unit integration, coordination, and monitoring. Based on this foundation, Total Quality Management is positioned as the core managerial approach that emphasizes continuous improvement, standardization, and employee involvement in organizational processes. Digitalization is then treated as a mediating variable because it acts as the operational mechanism that enables TQM principles to be implemented more effectively through integrated communication, monitoring, and coordination systems. Therefore, service quality is conceptualized not merely as an external service result, but as the outcome of internally managed, process-based, and digitally supported organizational practices.

2. RESEARCH METHOD

This study employed a quantitative explanatory design with a deductive approach, aiming to test hypotheses regarding the relationship between Total Quality Management (TQM), digitalization, and service quality. The research population consisted of all employees of the Representative Office of Bank Indonesia in Purwokerto City, totaling 45 staff members. Because the number of employees was relatively limited, this study used a total sampling technique, in which the entire population was included as research respondents. Data were collected through structured questionnaires using a five-point Likert scale, ranging from strongly disagree to strongly agree, supported by direct observation and literature review to strengthen the theoretical basis of the study. Operationalization Variables could be seen at Table 2.

Table 2. Operationalization Variables

Variable	Dimension	Indicator
Total Quality Management (X) (Jumady, 2021)	Scientific management	Time and motion
		Standard operating procedure
		Efficiency
	Group dynamic	Work group
		Work atmosphere
		Problem solving
	Training	Routine training
		Employee development
		Technical competence and service skills
	Employee involvement	Providing input
		Availability of forums
		Acceptance of suggestions
	Sociotechnical system	Suitability of the work system
		Digitalization
		Understanding of employee contribution
	Organization development	Openness to change
		Evaluation system
		Change based on analysis
	Corporate culture	Core corporate values
		Communication flow
		Decision making
	New leadership theory	Leadership vision
		Leader activeness
		Leader commitment
	Strategic planning	Long-term planning
		Organizational goals

Variable	Dimension	Indicator
Digitalization (M) (Schallmo & Tidd, 2020)	Dialogic communication	Strategic actions
		Interactivity
		Involvement
		Transparency
	Interactive engagement	Speed of technological innovation
		Perceived usefulness
		Social impact
	Use of technology for training and development	Accessibility and flexibility
		Managerial support
		Technological infrastructure
	Use of digital media for marketing, communication, and stakeholder engagement	Program campaign
		CSR information
		Stakeholder engagement
Service Quality (Y) (Kotler & Keller, 2021)	Reliability	Appropriate service
		Accurate service
		Timeliness
		Transparent information
	Tangibles	Physical facilities
		Digital technology
		Employee appearance
		Facilities and infrastructure
	Responsiveness	Responsive
		Alertness
		Ease of communication
		Promptness
	Assurance	Security
		Skilfulness
		Politeness
		Service quality
	Empathy	Understanding needs
		Attention
		Suitability of service
		Fairness in service

Source: Jumady (2021), Shallmo & Tidd (2020), Kotler & Keller (2021)

The data were analyzed using Partial Least Squares–Structural Equation Modeling (PLS-SEM) with SmartPLS software. The analysis consisted of two stages: evaluation of the outer model and the inner model. The outer model was assessed through average variance extracted (AVE) and reliability. AVE was considered adequate when value exceeded 0.50, while reliability was confirmed when Composite Reliability values were above 0.70. The inner model was evaluated using R^2 , Q^2 , and Goodness of Fit. Hypothesis

testing, including the mediation effect, was conducted using the bootstrapping method, with significance determined at $p < 0.05$.

3. RESULTS AND DISCUSSIONS

3.1 Measurement Model (Outer Model)

The validity and reliability tests of the measurement model confirmed that all indicators met the required thresholds. The measurement of validity was using AVE that presented as Table 3.

Table 3. AVE Test

Variable	AVE	Status
Total Quality Management	0,627	Valid
Digitalization	0,698	Valid

Variable	AVE	Status
Service Quality	0,647	Valid

Source: Author's elaboration (2025)

Based on Table 4.7, it is known that the Average Variance Extracted (AVE) value for each variable is greater than 0.5, so all variables are declared to have met the convergent validity test, and this study has good data validity.

The reliability test was conducted using Composite Reliability and Cronbach's Alpha. A variable can be considered reliable if it has a Cronbach's Alpha value of ≥ 0.6 or a Composite Reliability value of ≥ 0.7 .

Table 4. Reliability Test

Variable	Cronbach's Alpha	Composite Reliability	Status
Total Quality Management	0,976	0,977	Reliable
Digitalisasi	0,952	0,958	Reliable
Service Quality	0,968	0,970	Reliable

Source: Author's elaboration (2025)

The results of the composite reliability and Cronbach's alpha tests indicate that the research instrument is reliable, as all latent variables have composite reliability values of ≥ 0.7 and Cronbach's alpha values of ≥ 0.6 . Therefore, it can be concluded that the questionnaire used as the research instrument is reliable or consistent.

3.2 Structural Model (Inner Model)

The R-square value indicates how much influence the independent variables simultaneously included both within and outside this study have on the dependent variable. The interpretation of the R^2 value is as follows: $R^2 \geq 0.75$ = very strong, $R^2 \geq 0.50$ = strong, $R^2 \geq 0.25$ = moderate, and $R^2 < 0.25$ = weak, with the results as follows.

Table 5. R-square Test

Variable	R Square	Kategori
Digitalization	0,855	Very Strong
Service Quality	0,854	Very Strong

Source: Author's elaboration (2025)

Based on the results of the R-Square test, it can be seen that the R-square value for the effect of Total Quality Management (X) on Digitalization (M) is 0.855, which falls into the very strong category. This means that the variability of Digitalization (M) can be explained by Total Quality Management (X) by 85.5%, while the remaining 14.5% is explained by other variables outside this study.

Q-Square assesses the extent to which the model is able to predict observed values and parameters (predictive relevance). A model is considered to have predictive relevance if the Q-Square value is greater than zero; however, if the value is below zero, the model is considered not to have predictive relevance.

Table 5. Q-square Test

Variable	Q-Square	Status
Digitalization	0,558	Moderate
Service Quality	0,442	Weak

Source: Author's elaboration (2025)

The Q-Square values for the two endogenous constructs, namely Digitalization (M) at 0.558 and Service Quality (Y) at 0.442, are both greater than 0. Therefore, it can be concluded that the model has good predictive ability and adequate predictive relevance for both constructs.

The model fit test was conducted by examining the estimated output results from SmartPLS using the Goodness of Fit (GoF) value. The GoF value test uses the following calculation.

$$\text{GoF} = \sqrt{\text{AverageAVE} \times \text{AverageR}^2}$$

$$\text{GoF} = \sqrt{0,657 \times 0,854}$$

$$\text{GoF} = 0,743$$

Referring to the GoF interpretation criteria, this value is categorized as a large GoF because it exceeds the threshold of 0.36.

3.3 Hypothesis Testing

After conducting the outer model and inner model tests, the next step is to test the hypotheses by examining the T-statistic and P-value. A hypothesis is considered accepted if the P-value is < 0.05 and the T-statistic is > t-table. In this study, there are both direct and indirect effects because it involves an independent variable, a dependent variable, and a mediating variable

Table 6. Direct Effect

Construct	Path Coefficient	T Statistics	P Values	Result
Total Quality Management → Service Quality	0.548	3.382	0.001	Significant
Total Quality Management → Digitalization	0.925	39.249	0.000	Significant
Digitalization → Service Quality	0.393	2.419	0.016	Significant

Source: Author's elaboration (2025)

The first hypothesis tests the effect of Total Quality Management on Service Quality. The results show a t-statistic of 3.382 > 1.96 and a p-value of 0.001 < 0.05, so the first hypothesis is accepted. The path coefficient of 0.548 indicates a positive and significant effect. This means that higher Total Quality Management leads to higher Service Quality. The second hypothesis tests the effect of Total Quality Management on Digitalization. The results show a t-statistic of 39.249 > 1.96 and a p-value of 0.000 < 0.05, so the second hypothesis is

accepted. The path coefficient of 0.925 indicates a positive and significant effect. This means that higher Total Quality Management leads to higher Digitalization. The third hypothesis tests the effect of Digitalization on Service Quality. The results show a t-statistic of 2.419 > 1.96 and a p-value of 0.016 < 0.05, so the third hypothesis is accepted. The path coefficient of 0.393 indicates a positive and significant effect. This means that higher Digitalization leads to higher Service Quality.

Table 6. Indirect Effect

Construct	Path Coefficient	T Statistics	P Values	Hasil
Total Quality Management -> Digitalization -> Service Quality	0,364	2,369	0,018	Significant

Source: Author's elaboration (2025)

The fourth hypothesis tests the effect of Total Quality Management on Service Quality through Digitalization. The results show a t-statistic of 2.369 >

1.96 and a p-value of 0.018 < 0.05, so the fourth hypothesis is accepted. The path coefficient of 0.364 indicates a positive and significant indirect effect. This means

that Digitalization partially mediates the effect of Total Quality Management on Service Quality.

3.4 Discussion

The study revealed that digitalization plays a significant role in enhancing service quality. Managers and directors demonstrated higher digital engagement and capability, while operational staff lagged behind, reflecting a digital divide. This confirms Kohtamäki et al. (2020), who argued that digital transformation requires not only infrastructure but also equitable adoption across organizational levels. The significant impact of digitalization on service quality, as found in this study, aligns with Sony and Naik (2020) and Taufiqurokhman et al. (2023), who showed that digital tools improve responsiveness, reliability, and efficiency in service delivery.

The hypothesis testing results further confirmed that TQM has both direct and indirect effects on service quality. The direct positive effect of TQM on service quality supports prior studies in both healthcare and public sector settings [17], [18]. The significant relationship between TQM and digitalization indicates that quality management fosters organizational readiness to adopt digital innovations [4]. Moreover, the mediating role of digitalization explains how TQM improves service quality, confirming that digitalization acts as an enabler in translating quality management principles into improved service delivery. This result extends previous research by providing empirical evidence within a central bank representative office, a context rarely examined in prior studies.

This study offers originality in three main ways. First, it examines the relationship between Total Quality Management (TQM), digitalization, and service quality in the context of a regional representative office of a central bank, a

setting that has received limited attention in previous studies, which have more often focused on private companies, hospitals, or general public service institutions. Second, this research positions digitalization as a mediating variable that explains how TQM practices are translated into better service quality across work units, whereas prior studies have generally treated digitalization as a direct predictor, a supporting tool, or a contextual factor rather than an intervening mechanism. Third, this study emphasizes cross-unit service processes within a public financial institution, showing that service quality is not only shaped by formal procedures and employee competence, but also by the integration of digital communication and coordination between units. Therefore, the study extends the literature by offering empirical evidence that the effectiveness of TQM in financial organizations is strengthened when supported by digitalized coordination systems across organizational units.

4. CONCLUSIONS

This study examined the influence of Total Quality Management (TQM) on service quality at the Bank Indonesia Representative Office in Purwokerto, with digitalization as a mediating variable. The results confirmed that all hypotheses were accepted. TQM has a significant positive effect on service quality, both directly and indirectly through digitalization. TQM also has a significant effect on digitalization, and digitalization itself significantly improves service quality. Overall, the study concludes that TQM and digitalization jointly contribute to improving service quality in a public financial institution. Digitalization acts as a partial mediator that strengthens the impact of TQM on service quality, proving that technology adoption is essential for sustaining continuous improvement and enhancing service performance.

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